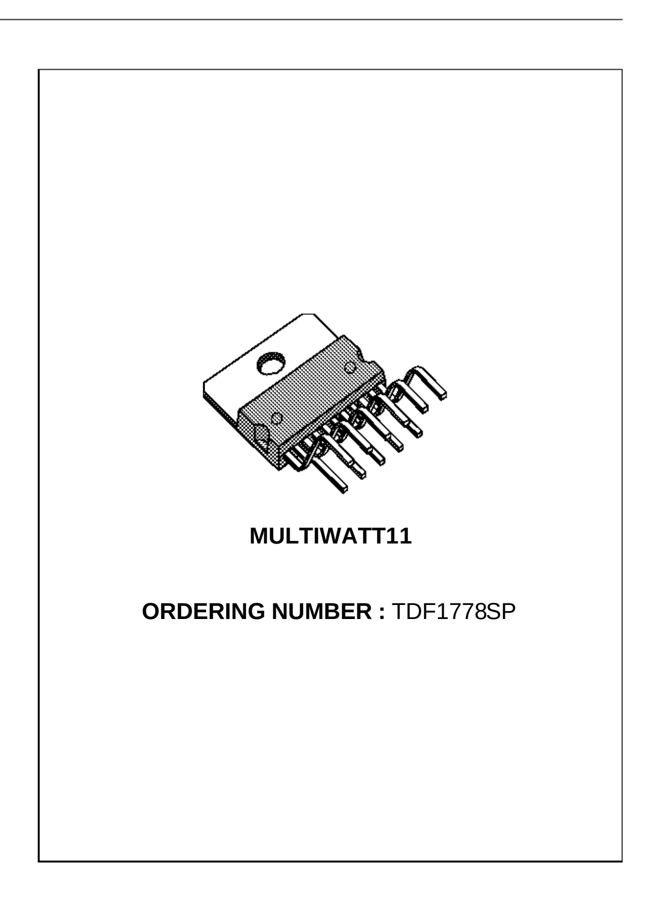


TDF1778

DUAL 2-A SOURCE DRIVER

- OUTPUT CURRENT UP TO 2.5 A
- WIDE RANGE OF SUPPLY VOLTAGES : + 8 to + 32 V
- CAN WITHSTAND OVERVOLTAGES OF AS HIGH AS 60 V BETWEEN V_{CC} AND GROUND
- INTERNAL ZENER DIODE PROVIDES FAST SWITCHING OF INDUCTIVE LOADS
- OUTPUT VOLTAGE CAN BE LOWER THAN GROUND



MULTIWATT11

ORDERING NUMBER : TDF1778SP

DESCRIPTION

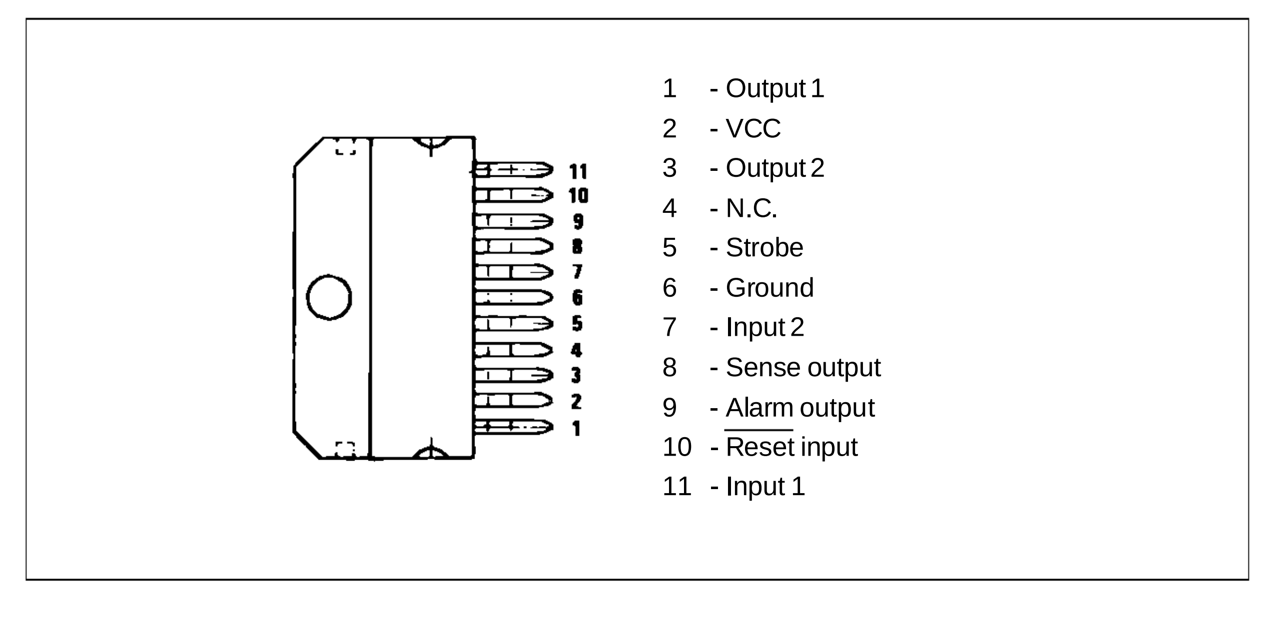
The TDF1778 is a dual source driver delivering high output currents and capable to drive any type of loads (Electrovalves, contactors, lamps).

This device is essentially blow-out proof, each output is protected against short-circuits. If internal dissipation becomes too high, drivers will shut down to prevent excessive heating. An ”ALARM” output is provided to indicate the action of the thermal protection. To reactivate the power outputs, the reset input must be forced to low state.

”SENSE” information of both power outputs are ORed together and then processed internally.

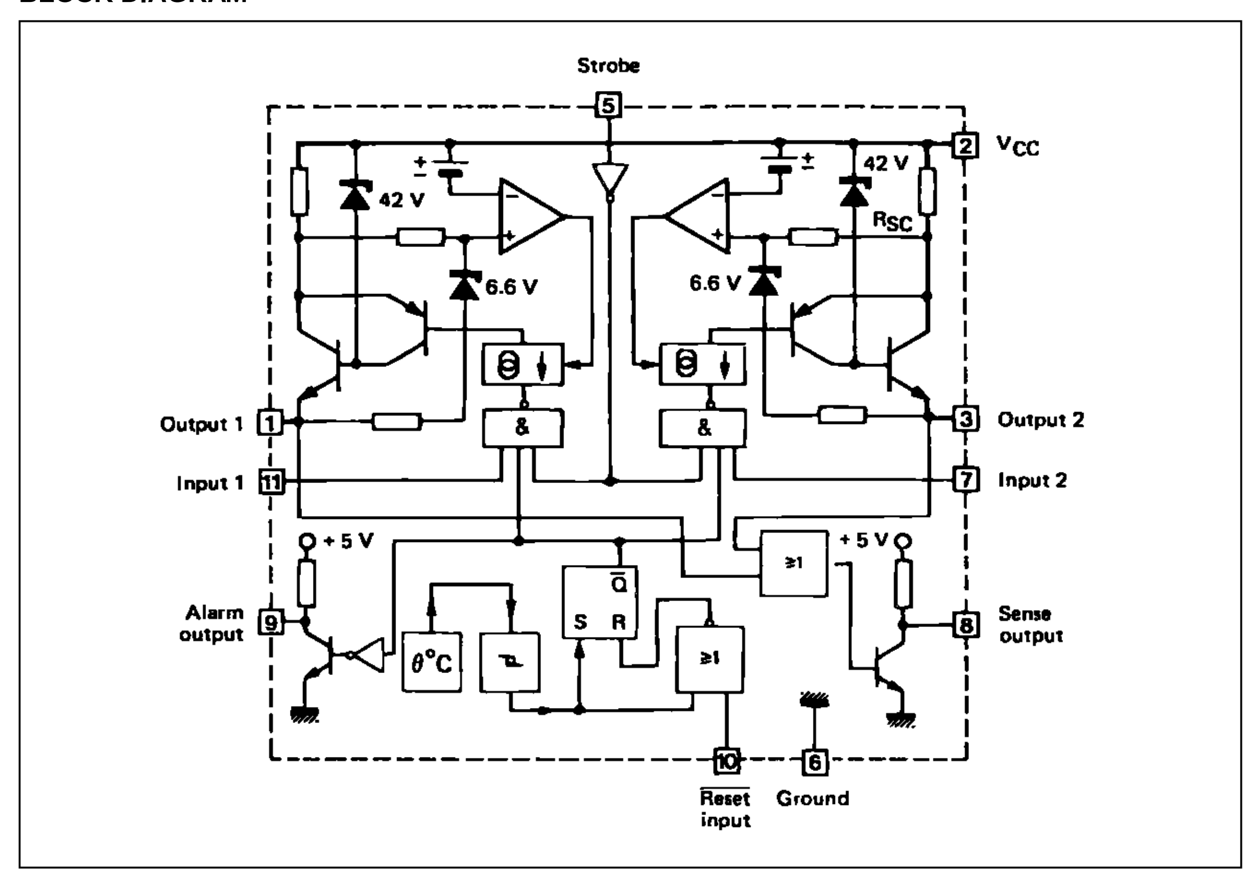
A ”STROBE” input is also provided to offer the possibility of disabling the power outputs.

PIN CONNECTION



1 - Output 1
2 - VCC
3 - Output 2
4 - N.C.
5 - Strobe
6 - Ground
7 - Input 2
8 - Sense output
9 - Alarm output
10 - $\overline{\text{Reset}}$ input
11 - Input 1

BLOCK DIAGRAM



ABSOLUTE MAXIMUM RATINGS

Symbol	Parameter	Value	Unit
V_{CC}	Supply Voltage	35 V (60 V/10 ms)	V
V_I, V_{reset}	Input Voltage (pins 7, 10 and 11)	– 30 to + 50	V
V_{strobe}	Strobe Input Voltage	– 0.5 to V_{CC}	V
I_O	Output Current	Internally Limited	A
P_{tot}	Power Dissipation	Internally Limited	W
T_{oper}	Operating Ambient Temperature Range	– 40 to + 85	°C
T_j	Junction Temperature	+ 150	°C

THERMAL DATA

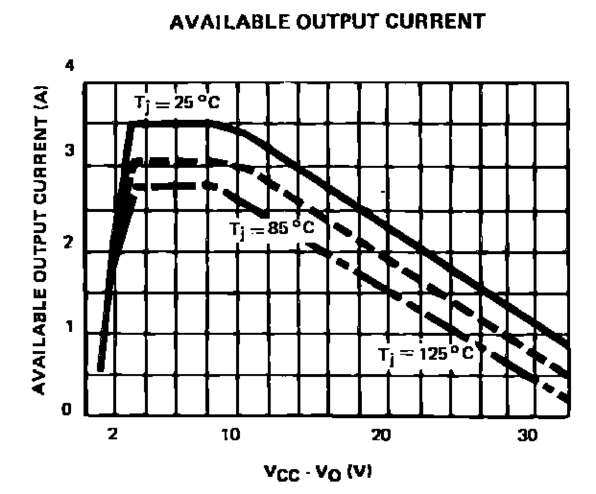
Symbol	Parameter		Value	Unit
$R_{th(j-c)}$	Junction-case Thermal Resistance	Max.	3	°C/W
$R_{th(j-a)}$	Junction-ambient Thermal Resistance	Max.	40	°C/W



ELECTRICAL CHARACTERISTICS (V_{CC} = + 24V, – 40°C < T_j < + 85°C, unless otherwise specified)

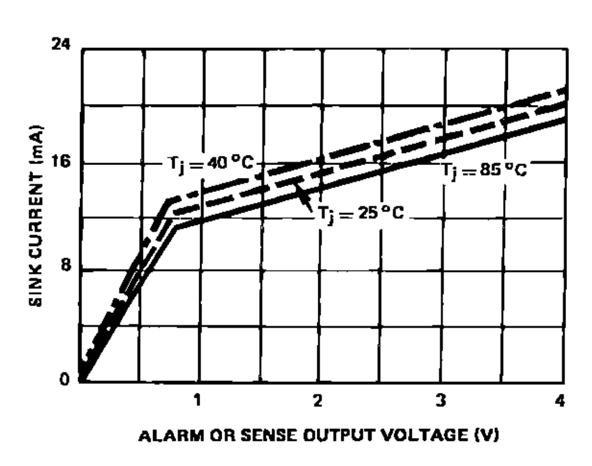
Symbol	Parameter	Min.	Typ.	Max.	Unit
V_{CC}	Power Supply Voltage	8	–	32	V
I_{CC}	Power Supply Current (pin 6), I_{01} = I_{02} = 2A	–	–	20	mA
V_{IL} V_{IH}	Logic Input Voltage (pins 7, 10, 11)	– 2	– –	0.8 –	V
V_I	Logic Input Threshold (pin 5)	–	0.8	–	V
I_{IH}	High Level Input Current (pins 7, 10, 11) V_I = + 2V	–	20	50	µA
I_{IL}	Low Level Input Current (pins 7, 10, 11) V_I = + 0.8V	– 5	0	+ 5	µA
V_{OH}	High Level Logic Output Voltage (pins 8, 9) I(8) = I(9) = – 30 µA	2.4	4	–	V
V_{OL}	Low Level Logic Output Voltage (pins 8, 9) I(8) = I(9) = 2 mA		–	0.4	V
$V_{CC} – V_{O1}$ $V_{CC} – V_{O2}$	Output Saturation Voltage (V(7) high, V(11) high, I_O = 2A)	– –	1.5	1.8	V
I_{OL}	Low Level Input Current (pins 1, 3) V(7) Low, V(11) Low, V_O = 0V	–	400	1000	µA
$V_{CC} – V_{O1}$ $V_{CC} – V_{O2}$	Switch–off Output Voltage (inductive load)	40 –	44 –	48	V
I_{O1}, I_{O2}	Available Output Current (pins 1, 3), V(7) High, V(11) High, V_{CC} – V_O = 32V, T_j = 25°C	100	–	–	mA
I_{Oalarm}	Available "Alarm" Output Current, V(9) = + 4V	4	8	–	mA
I_{Osense}	Available "Sense" Output Current, V(8) = + 4V	4	8	–	mA
$I_{IHsense}$	Output Sensing High Level Input Current (pins 1, 3) V_I = + 2V	–	1	2	mA
$V_{IHsense}$	High Level "Sense" Input Voltage (pins 1, 3)	0.8	1.9	2.5	V

AVAILABLE OUTPUT CURRENT

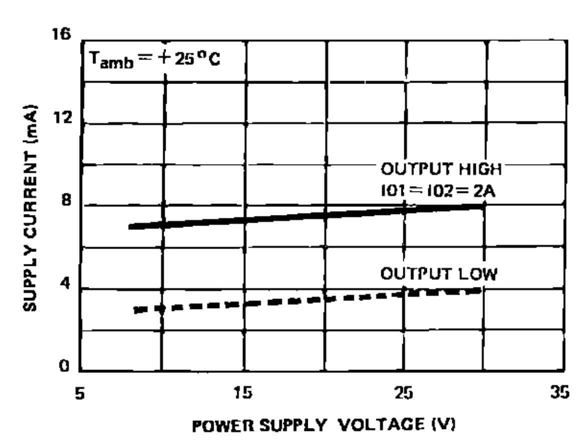


OUTPUT SATURATION VOLTAGE

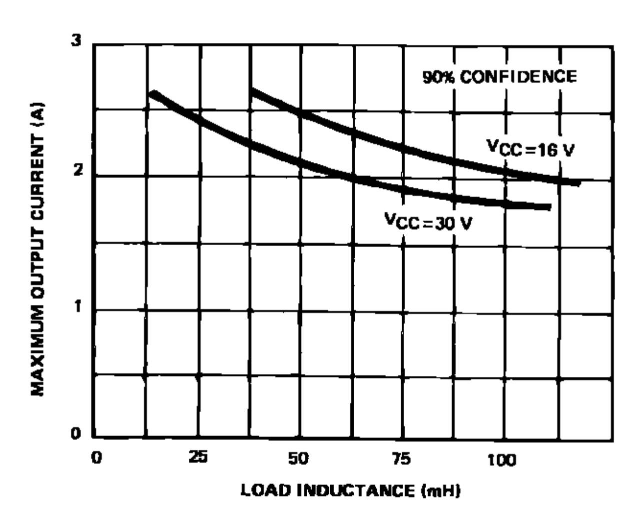
AVAILABLE ALARM OR SENSE OUTPUT CURRENTS



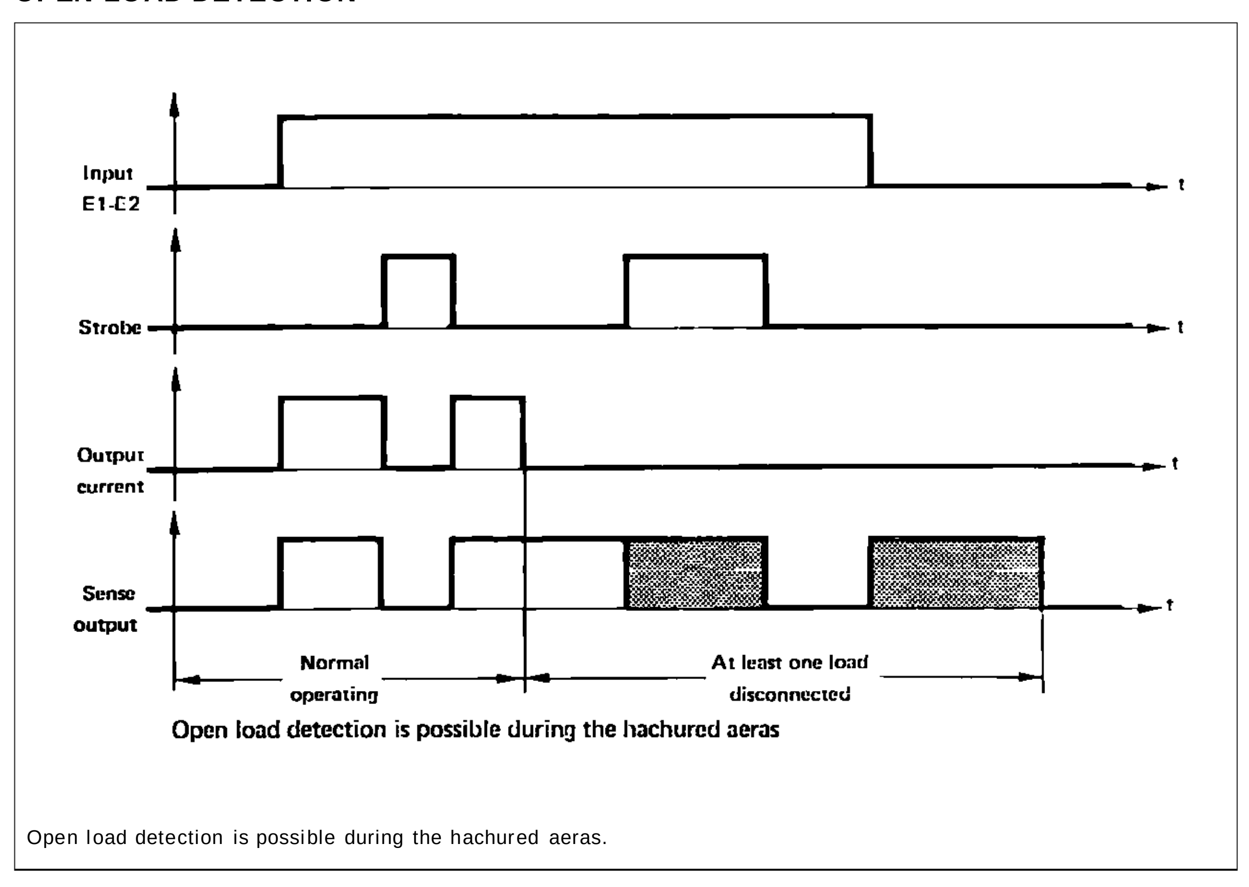
POWER SUPPLY CURRENT



MAXIMUM OUTPUT CURRENT VS LOAD INDUCTANCE

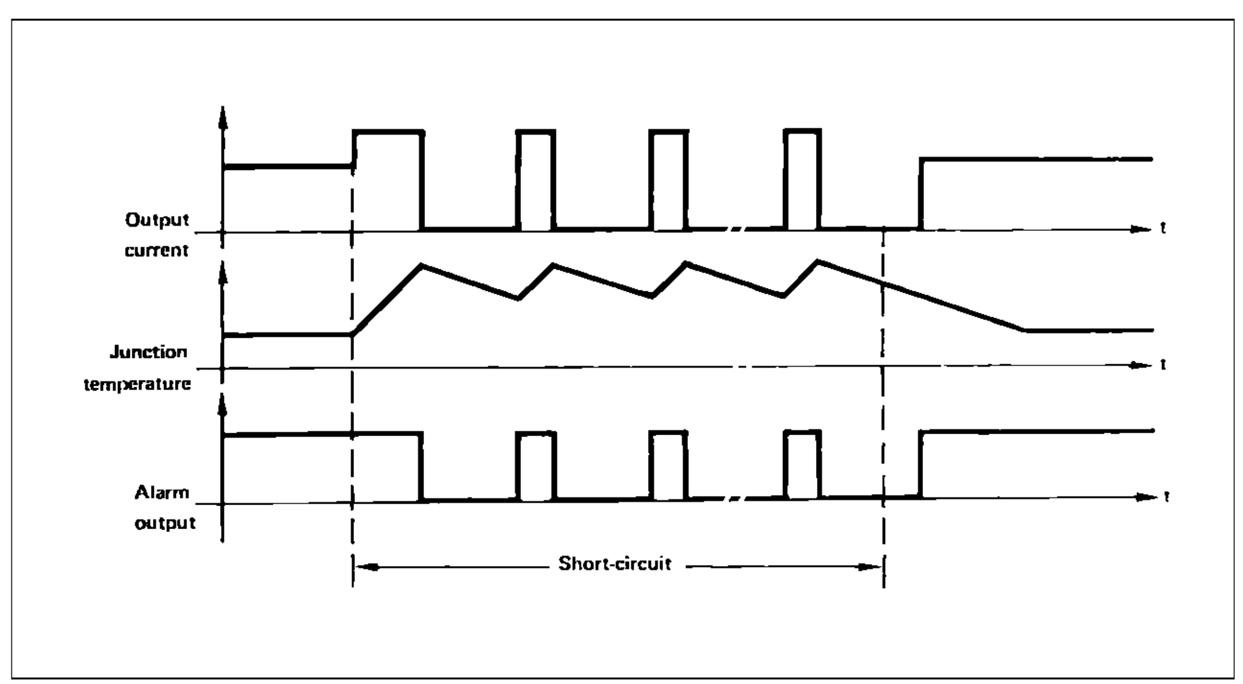


OPEN LOAD DETECTION

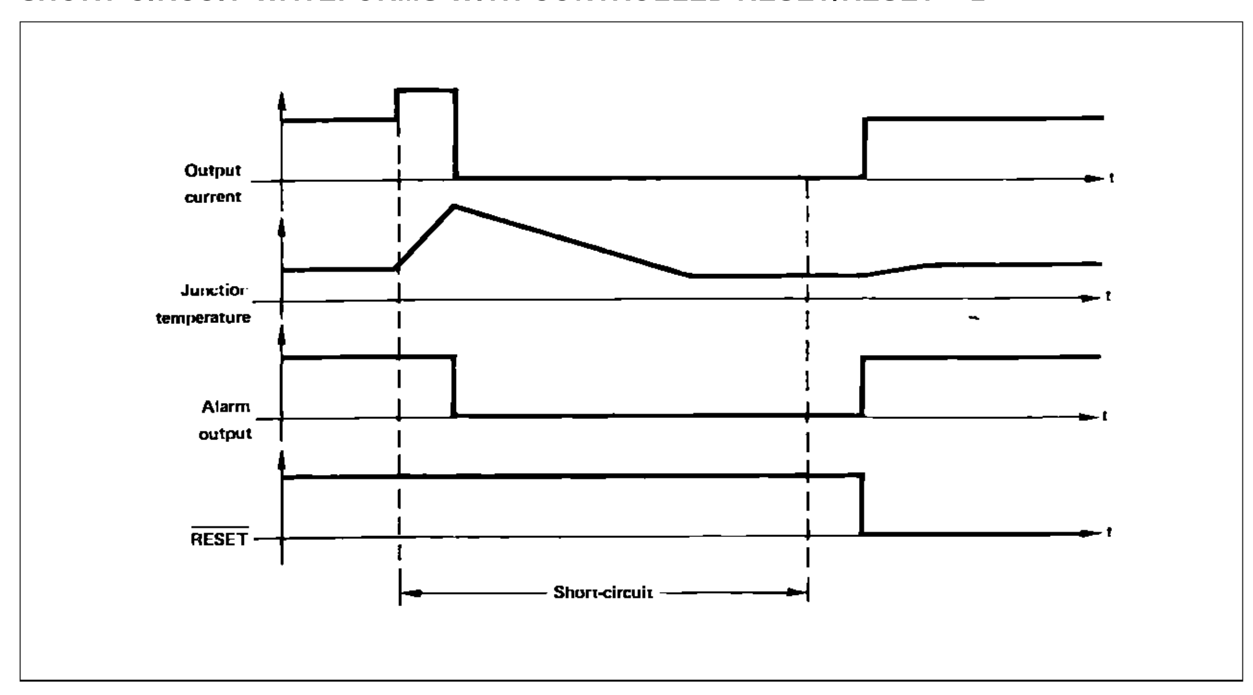


Open load detection is possible during the hachured aeras.

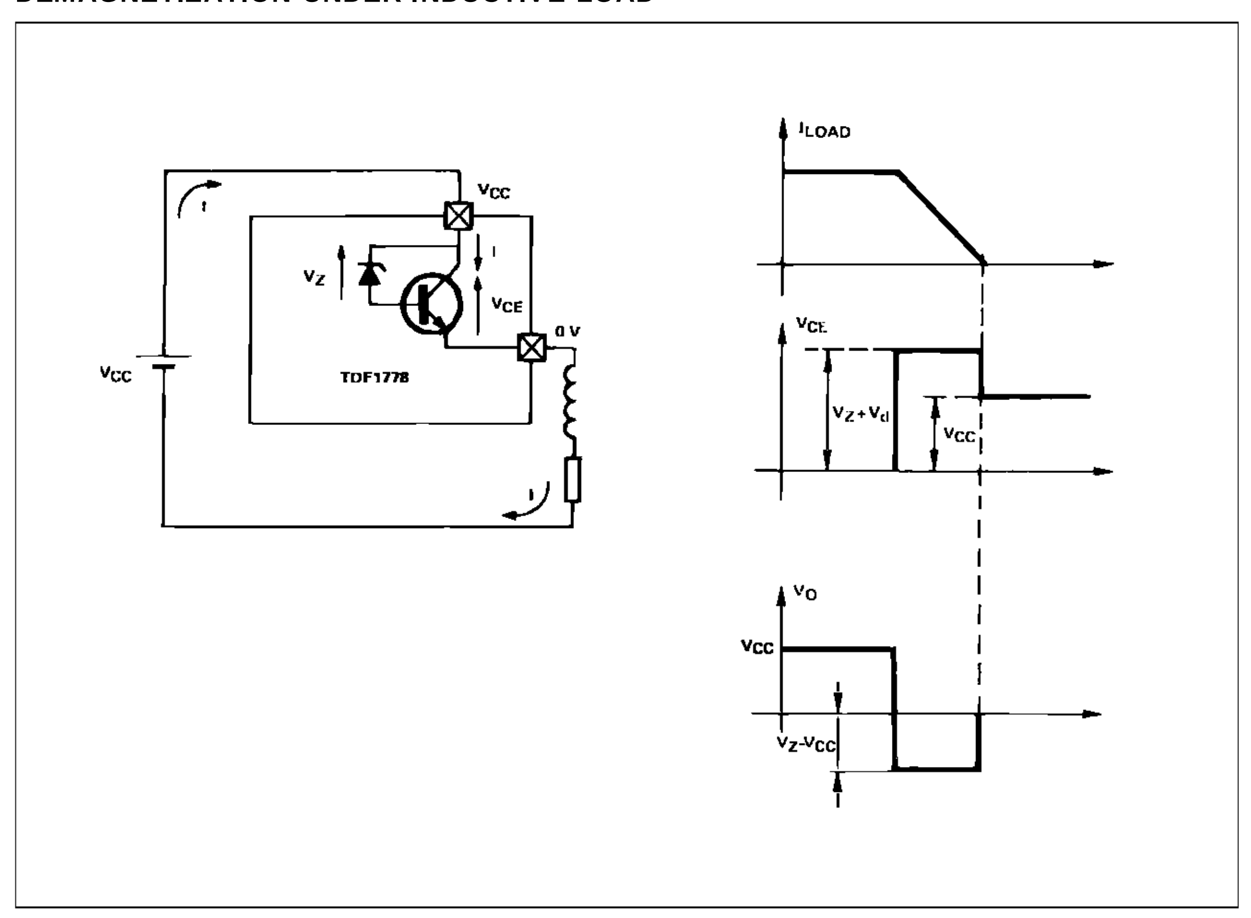
SHORT CIRCUIT CONDITIONS WAVEFORMS WITH AUTOMATIC RESET/$\overline{\text{RESET}}$ = 0



SHORT CIRCUIT WAVEFORMS WITH CONTROLLED RESET/$\overline{\text{RESET}}$ = 1

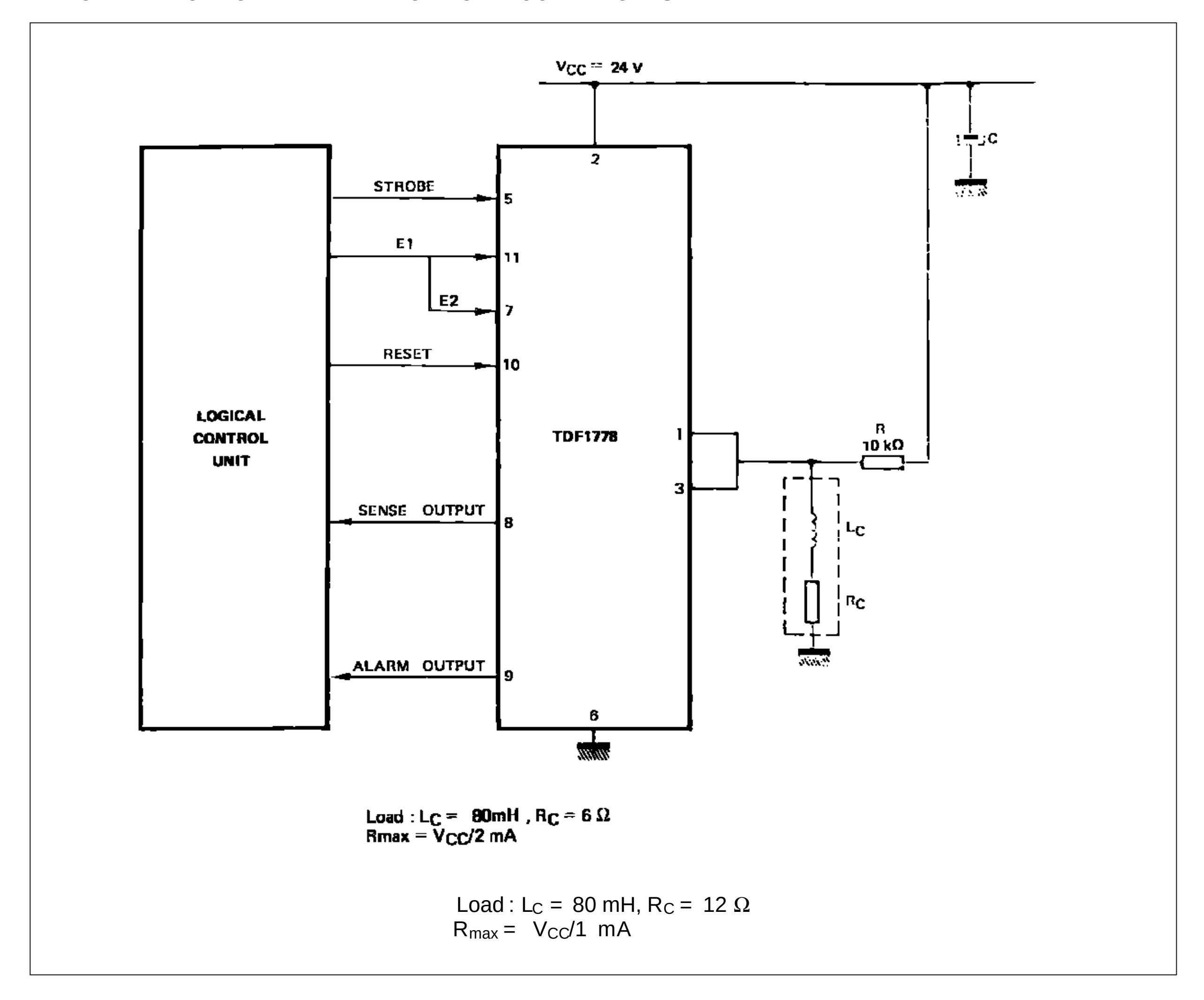


DEMAGNETIZATION UNDER INDUCTIVE LOAD



TYPICAL APPLICATION

TYPICAL APPLICATION WITH TDF1778 TWO INDUCTIVE LOADS 2 A - 24 V



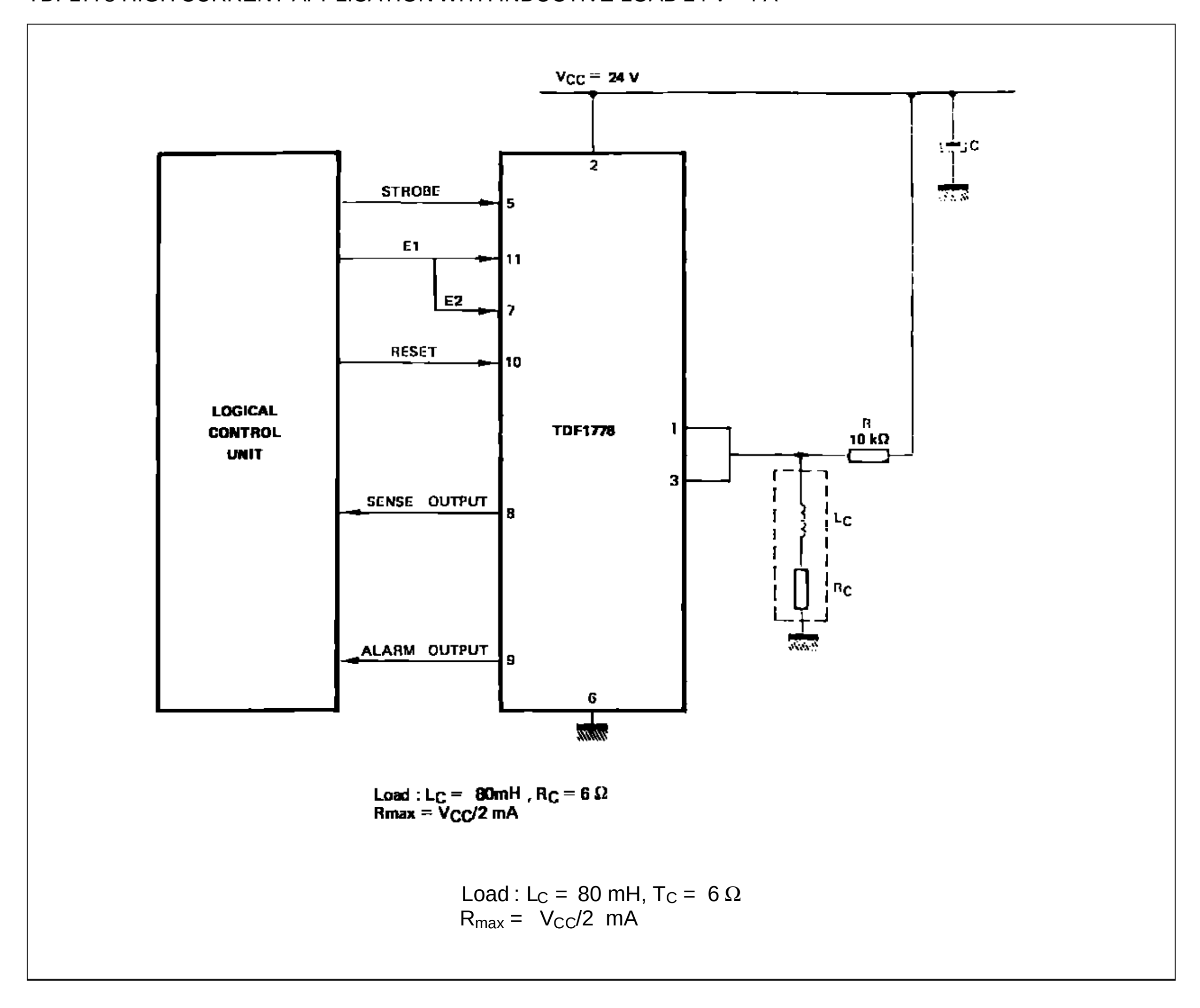
MAIN FEATURES

This application protected against short circuits.

The load disconnection is detected when inputs E1 and E2 are low and the sense output is high.

When thermal protection is activated the pin 9 is low. Inputs and outputs are TTL comptable.

TDF1778 HIGH CURRENT APPLICATION WITH INDUCTIVE LOAD 24 V - 4 A

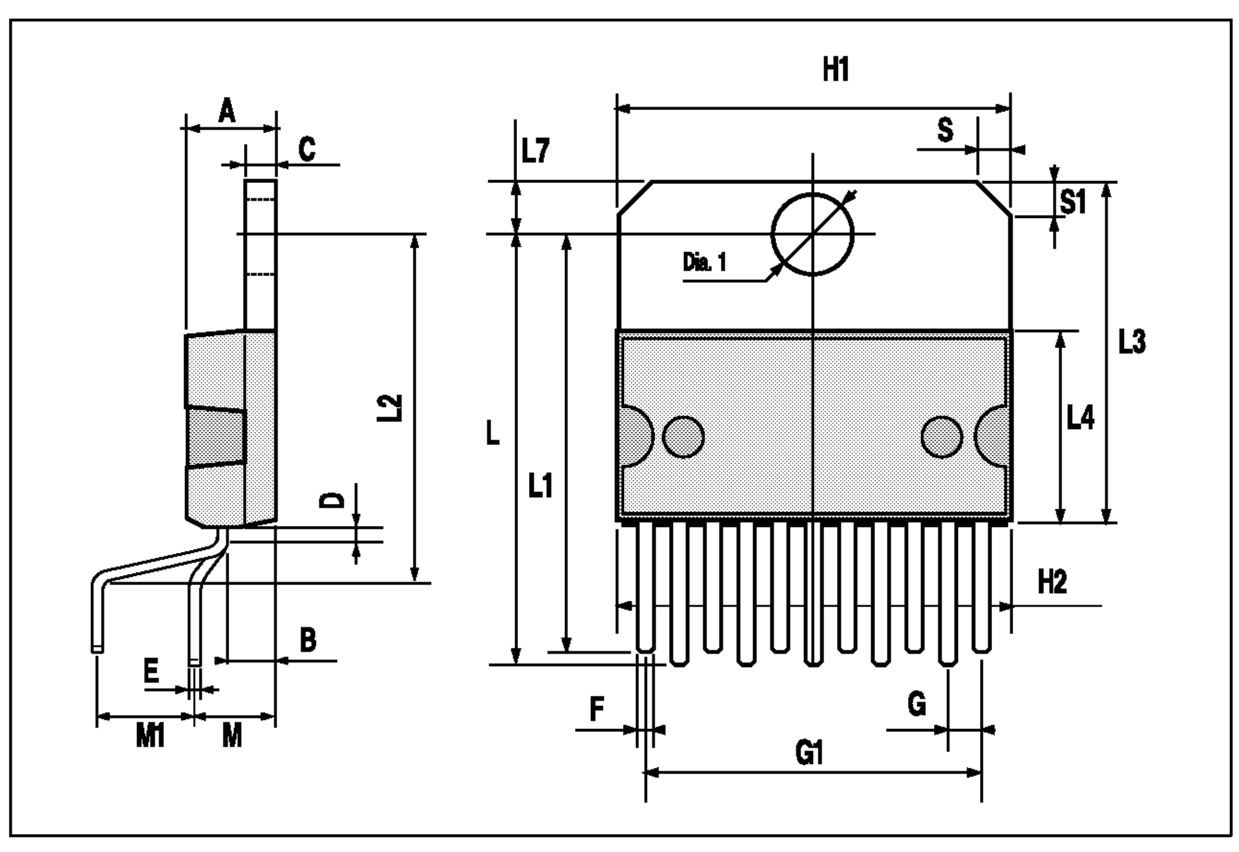


MAIN FEATURES

This application has the same features as the dual 2 A -12 V application.

MULTIWATT11 PACKAGE MECHANICAL DATA

DIM.	mm			inch		
	MIN.	TYP.	MAX.	MIN.	TYP.	MAX.
A			5			0.197
B			2.65			0.104
C			1.6			0.063
D		1			0.039	
E	0.49		0.55	0.019		0.022
F	0.88		0.95	0.035		0.037
G	1.45	1.7	1.95	0.057	0.067	0.077
G1	16.75	17	17.25	0.659	0.669	0.679
H1	19.6			0.772		
H2			20.2			0.795
L	21.9	22.2	22.5	0.862	0.874	0.886
L1	21.7	22.1	22.5	0.854	0.87	0.886
L2	17.4		18.1	0.685		0.713
L3	17.25	17.5	17.75	0.679	0.689	0.699
L4	10.3	10.7	10.9	0.406	0.421	0.429
L7	2.65		2.9	0.104		0.114
M	4.25	4.55	4.85	0.167	0.179	0.191
M1	4.73	5.08	5.43	0.186	0.200	0.214
S	1.9		2.6	0.075		0.102
S1	1.9		2.6	0.075		0.102
Dia1	3.65		3.85	0.144		0.152




SGS-THOMSON
MICROELECTRONICS